

## Runoff, hydrographs and changes in the water cycle over time 3.1.1.2 ANSWERS

Q1	<i>True or False?</i>	
A	Runoff depends entirely on the level of precipitation	False
B	The velocity of runoff is affected by the gradient of land	True
C	The same soil can vary in terms of its infiltration capacity at different times	True
D	It's not just the amount of rainfall but its distribution which affects runoff	True
E	A flood hydrograph predicts when a river will flood	False

Q2	<b>Match each term to the correct description</b>	
A	The entire area from which a drop of rainfall eventually reaches a river	Drainage basin
B	Number of hours between maximum rainfall and peak river discharge	Lag time
C	The shape of the land surface	Topography
D	Rock quality permitting water to flow through it by means of fissures & joints	Pervious
E	Standard level of water in a river	Base flow
Select from: <b>Topography</b> <b>Base flow</b> <b>Lag time</b> <b>Drainage basin</b> <b>Pervious</b>		

Q3	<b>Tick which is the odd one out from each group of 6 terms</b>	
A	Drizzle	Hail
	Sleet	Evaporation ✓
	Snow	Rain
<b>All the other 5 are forms of Precipitation. Evaporation is a process that contributes to precipitation.</b>		
B	Rising limb	Base flow
	Peak discharge	Falling limb
	Infiltration ✓	Lag time
<b>All the other 5 are features of a flood hydrograph. Infiltration is a preceding process.</b>		
C	Confluence	Drainage pattern
	Watershed	Source
	Tributary	Impermeable rock ✓
<b>All the other 5 are features of a drainage system. The rock type is independent of this.</b>		
D	Flooding ✓	Water vapour
	Precipitation	Evaporation
	Condensation	Solar energy
<b>All the other 5 are features of the hydrological cycle. Flooding may or may not be a consequence.</b>		
E	Permeable	Pervious
	Evapotranspiration ✓	Porous
	Impervious	Infiltration capacity
<b>All the other 5 are qualities of surfaces that allow determine whether water penetrates the ground.</b>		

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Q4	Decide which factors will lead to a long lag time/small peak discharge flood hydrograph and which will result in a short lag time/high peak discharge flood hydrograph		
	<i>Long lag time / small peak discharge</i>	<i>Short lag time / high peak discharge</i>	
	<p>Deep soil layer</p> <p>Porous rock</p> <p>Afforestation</p>	<p>Impermeable surface</p> <p>Intense prolonged rain</p> <p>Small river basin</p> <p>Steep topography</p> <p>Long drought before rainfall</p> <p>Urban growth on farmland</p> <p>Rapid snow melt</p>	
	Impermeable surface	Intense prolonged rain	Small river basin
	Steep topography	Long drought before rainfall	Urban growth on farmland
	Deep soil layer	Porous rock	Rapid snow melt
			Afforestation

Q5	<i>Suggest ways in which human activity can affect the hydrological cycle over time</i>
A	<p>Amplifying the hydrological cycle</p> <p>Contributing to global warming → more evaporation of water vapour → more rainfall</p> <p>Contributing to global warming → faster glacier melt → greater river discharge</p> <p>More impermeable surfaces (cities) → faster runoff → shorter time lag for discharge</p> <p>Increased surface water storage → more evaporation → increased precipitation</p>
B	<p>Reducing the hydrological cycle</p> <p>Removal of natural vegetation → reduced transpiration → less precipitation</p> <p>Reduction of surface water → reduced evaporation → less precipitation (Aral Sea)</p> <p>Greater river abstraction → reduced flow → less evaporation from river channel</p>